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# *GREVILLEA PAUCIFLORA* R. BR. SSP. *LEPTOPHYLLA* (PROTEACEAE), A NEW SUBSPECIES FROM EYRE PENINSULA, SOUTH AUSTRALIA

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## Abstract

*G. pauciflora* ssp. *leptophylla* circumscribes populations of plants with very slender subterete leaves drying mid green; they are confined to central Eyre Peninsula, South Australia and are closest allied to *G. pauciflora* ssp. *pauciflora*. Such leaves are population constant, although on the periphery of the area of distribution of the subspecies there is evidence of wider variation in the form of plants with leaves tending towards the narrow linear flat leaves of ssp. *pauciflora* which form part of the variation on plants of ssp. *pauciflora* on surrounding parts of Eyre Peninsula. In ssp. *pauciflora* and the two Western Australian subspecies leaves differ from ssp. *leptophylla* in drying grey-green and the leaf margins usually free from each other for their whole length or rarely contiguous for a small portion of their length.

This new subspecies of *Grevillea pauciflora* is described to make the name available for inclusion in the forthcoming treatment of the genus in the *Flora of Australia* (R.O. Makinson, in preparation) and to promote further consideration of its conservation status owing to clearing of its habitats in recent years.

The description provided is largely diagnostic, and has been put in the context of recent descriptions of *Grevillea* taxa in the *Flora of South Australia* (Barker 1986) and generic revisions (McGillivray 1993; Olde & Marriott 1995). Despite the removal of the new subspecies from *G. pauciflora* ssp. *pauciflora* in the latter two revisions, their descriptions of the ssp. *pauciflora* seem unlikely to need modification.

**Grevillea pauciflora** R. Br. ssp. **leptophylla** W.R. Barker, *ssp. nov.*

*G. pauciflora* R. Br. ssp. *"Narrow-leaved"* (*R. Bates 6936*): W.R. Barker, List Vasc. Pl. S. Austral. edn 4 (1993) 8.

*G. pauciflora* ssp. *pauciflora*: McGillivray, Grevillea, Prot.: taxonom. rev. (1993) 364, partly (as to linear leaved plants in NW of range); Olde & Marriott,, The Grevillea Book, 2 (1995) 84, partly (as to pl. 63B, a photo of plants collected by R. Bates from Cummins).

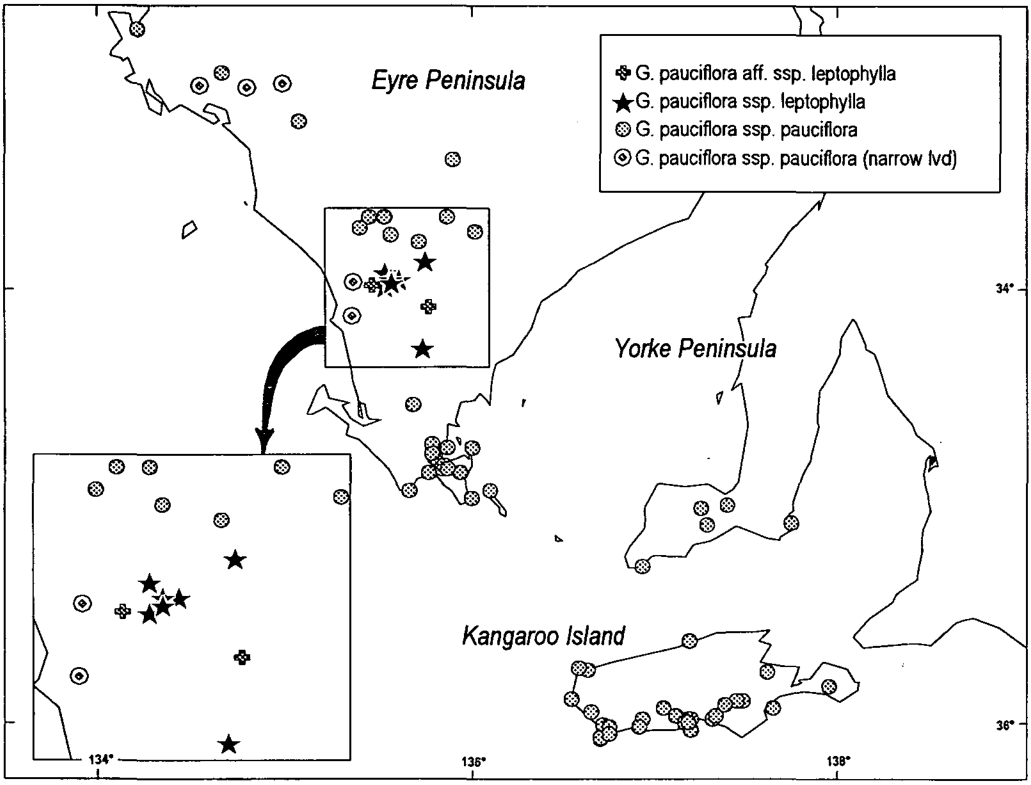
Plantis subspeciebus alteris *G. pauciflorae* foliis filiformibus, subteretibus, in sicco viridibus mediis, et areale distributionis in Paeninsulare Eyreo centrali differt.

*Holotypus*: *T. Hall 412*, 16.ix.1990, South Australia, Eyre Peninsula, Koolidie Station, NW of Yeelanna, along the road for 30 metres, growing in sand amongst limestone with *Melaleuca uncinata*, *Eucalyptus socialis*, etc., *Callitris* sp; spreading bush about 2 ft high,; leaves linear with recurved margins; flowers red; fruit elongated; population of 24 ranging in height from 1 ft [high] compact bushes up to 5 ft high spreading bushes; AD 99606322. *Isotypi*: CANB, NSW.

*Branchlets* ± round in cross-section; persistently densely raised tomentose, the hairs white on young shoots, turning grey. *Leaves* filiform, subterete, (1.0)2.0–4.0(5.5) cm long, (0.4)0.6–0.9(1.1) mm wide, flexible, densely brown-sericeous when young, quickly glabrescent but for the basally exposed lower side bearing dense appressed 2-armed hairs, the mature leaves deepish green, drying mid green, frequently in fresh material, consistently in dried with a single abaxial groove formed by the margins so recurved as to adjoin over their whole length except at the base. *Flowers* including the pedicels red, with a yellow style end and pollen-presenter; *pedicel* sparsely white-sericeous, the 2-armed hairs with ± appressed arms; *perianth* 5.5–6.0 mm long (unstraightened), externally with very sparse white-sericeous hairs on tube and base of limb, grading to dense at very apex of limb,

internally with dense woolly beard of white hairs c. 1.5–2 mm below the limb around the lower half of the style; *pistil* 7.5–8.5 mm long, the style 4.8–5.5 mm long, hardly exserted from the perianth. *Fruits* obliquely narrow ellipsoid, 12–13.5 mm long, c. 4 mm wide, the persistent style 5.2–6.0 mm long. (*Photograph*: pl. 63B: Olde & Marriott 1995, sub *G. pauciflora* ssp. *pauciflora*, the source of the style colour).

*Distribution* (Map 1): Confined to central Eyre Peninsula to the north and northwest of Cummins.




Map 1. Distribution of the subspecies of *Grevillea pauciflora* R. Br. in South Australia. (A full distribution of the species, which extends into southern Western Australia, is shown in McGillivray 1993).

*Ecology*: The subspecies occupies scattered shrubbery in the calcareous *Eucalyptus* mallee woodland which characterises the Kappawanta Environmental Assocation of Laut et al. (1977) from which most collections have been made. It also has been located in the Yeelanna Environmental Assocation (*Bates 6936*) which is a largely cleared calcrete plain with remnant roadside vegetation.

*Conservation status*

The subspecies is known from several localities. At present up to 24 plants have been located in the type locality. This one locality seen is in an area of extensive bush which could be subject to clearance applications. Two searches for the plant, including one by the author in 1995, for a further locality north of Cummins (*Bates 6936*), where the plant was found nine years earlier, have been unsuccesful. Other locations, collected by T. Croft and R. Barrat, have been subject to clearance applications. A conservation category of 2R (following Leigh, Briggs & Hartley 1981), is suggested for the plant. However, field

surveys are needed in the area and the category is dependent on the pressure clearing has on populations.

*Notes*

The plant has all the characters which distinguish *G. pauciflora* from its relatives, as cited in McGillivray (1993) and Olde & Marriott (1995). In particular the pistil in *G. pauciflora* ssp. *leptophylla* is similarly short and hardly exceeding the perianth. It is much longer and greatly exceeding the perianth in allied species such as *G. sparsiflora* F. Mueller and *G. oligantha* F. Muell.

This taxon was informally recognised by the author (Barker 1993) as distinct amongst South Australian representatives of *G. pauciflora* ssp. *pauciflora* on the basis of its narrower, filiform, subterete leaves (Table 1). Its leaves also differ from ssp. *pauciflora* in drying mid green; the upper surface of the leaves of ssp. *pauciflora* dry a grey-green colour. The plant is given formal taxonomic recognition owing to its separate range of distribution and population constancy of its morphological features. It is given subspecific rank within *G. pauciflora* because it is currently only distinguished on a few leaf characters.

Table 1: Some morphological differences between the subspecies of *G. pauciflora*: ssp. *pauciflora*, ssp. *leptophylla*, ssp. *saxatilis* and ssp. *psilophylla*. The perianth measurement is taken from McGillivray 1993 for all but ssp. *leptophylla*.

| Character | Ssp. *pauciflora* | | Ssp. *leptophylla* | Ssp. *saxatilis* | Ssp. *psilophylla* |
|---|---|---|---|---|---|
| | Normal width leaves | Narrow leaved populations | | | |
| Branchlets | rounded | rounded | rounded | longitudinally ribbed | longitudinally ribbed |
| Leaves | | | | | |
| shape | broad obovate to ... | ... narrow linear | filiform | narrow linear | narrow obovate |
| width | (2.0)2.5–8(12) mm | (1.0)1.2–2.0(2.5) mm | (0.4)0.6–0.9(1.1) mm | (1.2)1.5–2.5(4.2) mm | 2.9–7.8 mm |
| rigidity | rigid | rigid | flexible | rigid | rigid |
| indumentum on abaxial side | sericeous | sericeous | sericeous | sericeous | glabrous |
| longitudinal venation | obscure, not continuous over great lengths | obscure, not continuous over great lengths | obscure, not continuous over great lengths | often prominent continuous over ± whole leaf length | obscure, not continuous lengths |
| Perianth distance from beard to ventral limb base | 1–2 mm | 1–2 mm | 1.5–2 mm | c. 0.6 mm | c. 0.2 mm |
| Distribution | SA (ep, yp, ki) | SA (ep) | SA (ep) | WA | WA |

The new subspecies shares differences from the Western Australian subspecies, ssp. *psilophylla* McGillivray and ssp. *saxatilis* McGillivray, with the other South Australian subspecies, ssp. *pauciflora* (Table 1): its rounded branchlets, the extensive (1.5–2 mm) glabrous area between the base of the perianth limb and the woolly beard inside the tepals.

Several collections of *G. pauciflora* on Eyre Peninsula outside of the range of distribution of ssp. *leptophylla* have narrow linear flat leaves which are not quite as fine as in ssp. *leptophylla*, nor are the margins as close. They also have dried grey-green as characterises ssp. *pauciflora*. In most collections leaves vary in width on each branch, with width attaining 2.0-2.5 mm. These are considered to be narrow leaved forms of ssp. *pauciflora*. In two instances from locations closest to the range of distribution of ssp. *leptophylla* (*Croft AD99606319p.p.*, *Alcock 2673*) the leaf width of (0.9)1.0–1.4 mm is more constant and intermediate between ssp. *leptophylla* and the narrow leaved forms of ssp. *pauciflora*. The former collection contains a broad-leaved specimen of ssp. *pauciflora*. Croft (*AD99606319*)

noted that broad-leaved plants were in full flower, while the narrow-leaved plant was not flowering. While this may indicate phenological barriers to intergradation, these narrow-leaved plants may either be extremes of variation on the margins of the area of distribution of ssp. *leptophylla* or indicate some more complex intergradation between the two subspecies.

Plants of *G. pauciflora* with narrow linear leaves were noted in the recent revisions of McGillivray (1993) and Olde & Marriott (1995), the former noting that the characteristic being confined to the northwest of the range of the subspecies, presumably referring to parts of Eyre Peninsula. However, aside from the extremes of ssp. *pauciflora* with narrow linear leaves noted above, Olde & Marriott probably only saw a photograph of *Bates 6936*, while McGillivray may only have seen the intermediate-leaved collection *Alcock 2673*.

While there is sufficient evidence as to the distinctness of this taxon, further field work is required to establish if there is any intergradation between ssp. *leptophylla* and ssp. *pauciflora* and whether there are ecological and further morphological differences.

*Additional and selected specimens examined*:

*Grevillea pauciflora* R. Br. ssp. *leptophylla* W.R. Barker

SOUTH AUSTRALIA. **Eyre Peninsula**: *W.R. Barker 7596 & R.M. Barker*, 8.x.1995, On track to 'Koolidie' and Mt Cora, c. 6.3 km by road N of the junction near the Mitchell Telephone Exchange on Mitshan Road, c. 26 km direct NWof Yeelanna, AD (several duplicates for distribution; topotype); *R. Barrat s.n.*, 13.ix.1991, 33 km S of Lock, Section 53, Hundred of Shannon, AD99146022; *R. Bates 6936*, 31.viii.1986, 10 km N of Cummins, AD, CAF; *T. Croft s.n.*, 1.x.1990, C. 18 km NE of Mount Hope; Section 45, Hundred of Mitchell, AD99050229; *T. Croft s.n.*, 30.xi.1990, Section 26, Hundred of Shannon, AD99050221; *T. Croft s.n.*, 11.iv.1991, 25 km NW of Yeelanna; Section 46, Hundred of Mitchell, AD99606320.

*Grevillea pauciflora* R. Br.; specimens with affinities to ssp. *leptophylla* W.R. Barker

SOUTH AUSTRALIA. **Eyre Peninsula**: *C.R. Alcock 2673*, 24.vii.1968, E side of Sec[tion] 51, H[undre]d of Shannon, AD (2 sheets; n.v.: SI, NT, LSU, MA, MO, TAI, TUR); *T. Croft s.n.*, 10.iv.1991, 30 km NW of Yeelanna; Section 43, Hundred of Mitchell, AD99606319, p.p.;

*Grevillea pauciflora* R. Br. ssp. *pauciflora*; forms with narrow linear leaves:

SOUTH AUSTRALIA. **Eyre Peninsula**: *C.R. Alcock 2761*, 17.ix.1969, H[undre]d Kiana, roadside abutting Sec[tion] 45; *L. Beck per T. Dennis 11*, without specific locality, AD; *J.B. Cleland s.n.*, 23.ix.1957, Between Streaky Bay and Talia, AD966080119, AD97710927 (n.v.: TI, TUR); ; *T. Croft s.n.*, 17.x.1990, Section 57, Hundred of Witera, AD99110248; *T. Croft 9*, 31.v.1991, 2 km S of Mt Hope, AD; *T. Fuhbohm KULL30*, 24.vii.1989, Kulliparu Cons. Pk., NW corner, AD;.

*Grevillea pauciflora* R. Br. ssp. *pauciflora*; selected other collections:

SOUTH AUSTRALIA. **Eyre Peninsula**: *R. Brown s.n.*, 1802-5, Bay X, So[uth] Coast & Bay I."*Grevillea pauciflora* Br" (label in Brown's hand), MEL68731 (probable syntype: McGillivray 1993); *J.S. Browne 15*, 1874, Port Lincoln, MEL68746; *Hj. Eichler 19306*, 6.x.1967, Hundred of Blesing, c. 6½ km ENE of Bascombe Well Homestead, at track along eastern boundary fence, AD; *M.L. Evans 70*, 26.viii.1980, 45 km from Minnipa on the Mt Damper road, AD; *Dr Elizabeth Turner s.n.*, 3.ix.1963, C. 8 miles (12 km) NW of Port Kenny, MEL68730; *Warburton s.n.*, s.dat., Spencer's Gulf, MEL68743; *C. Wilhelmi s.n.*, s.dat., Near Lake Hamilton and Marble-Ranges, MEL68741, MEL68745; *C. Wilhelmi s.n.*, s.dat., Coffin Bay, MEL68744. **Yorke Peninsula**: *M. Kenny s.n.*, 14.x.1971, Edithburgh, AD97147105; *K.B. Warnes 45*, 23.ix.1972, Between Warooka and Stenhouse Bay, c. 40 km from South Bay, AD. **Kangaroo Island**: *E.N.S. Jackson 4375*, 22.viii.1982, Flinders Chase Nat. Pk., just W of Yacca Flat on road to Remarkable Rocks, c. 10 km S by road from 'Rocky River' Homestead, AD; *O. Tepper s.n.*, 13.xi.1886, Mt Taylor, MEL68740 p.p; *O. Tepper s.n.*, 1886, Mouth of Stunsail Boom R., MEL68740, p.p.

*Grevillea pauciflora* R. Br. ssp. *psilophylla* McGillivray

WESTERN AUSTRALIA: *Anon. s.n.*, 8 Oct, South end Russell ranges, MEL68732; *Anon. s.n.*, s.dat., Low round granite hills, S.West end Russ[e]ll Range, 2 ft., MEL68738 p.p.; *D.J. McGillivray 3601 & A.S. George*, 30.vi.1976, On Fisheries Road, opposite "Aroona" Station, E of Esperance, PERTH; *R.D. Royce 10065*, 4.xii.1971, W edge of Cape Arid National Park, along Balladonia Road, S of Mt Ragged, PERTH.

*Grevillea pauciflora* R. Br. ssp. *saxatilis* McGillivray

WESTERN AUSTRALIA: *M.I.H. Brooker B4504*, 10.iv.1974, Tower Hill, Mt Ragged, PERTH; *Miss Chopin*, vii.1938, Thomas River, PERTH; *A.S. George 16130*, 17.iv.1980, Below summit of Tower Peak, PERTH.

*Grevillea oligantha* F. Muell.

WESTERN AUSTRALIA: *J.B. Cleland s.n.*, 12.ix.1950, C. 55 km N of Esperance, AD 97310195; *R.J. Cranfield 986*, 65 km S of Gnowangerup, MEL597156 (ex PERTH); *R. Filson 9280*, 8.x.1966, 1 mile W of Thistle Bay, 36 miles E of Esperance, MEL648448; *R.A. Saffrey 294*, 7 Aug. 1968, 22.5 km E of Mount Madden at cross roads ... E of Lake King, AD (ex PERTH); *P. Wilson 3013*, 12.ix.1964, C. 48 km N of Esperance, AD.

*Grevillea sparsiflora* F. Muell.

WESTERN AUSTRALIA: *Anon. s.n.*, s.dat., Cape Arid, MEL74751 (paralectotype); *Miss S. Brooke s.n.*, 1887, Near Israelite Bay, MEL74752, MEL74753; *[Maxwell] s.n.*, Near Eyres relief, Sand plains,Cape Arid, MEL74750 (comprising lectotype and 2 paralectotypes); *R. Parsons 140*, 1.xii.1967, C. 18 km SSW of Cocklebiddy, AD (ex MELU); *R. Parsons 175*, 2.xii.1967, On clifftop on coast S of Caiguna, AD (ex MELU).

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